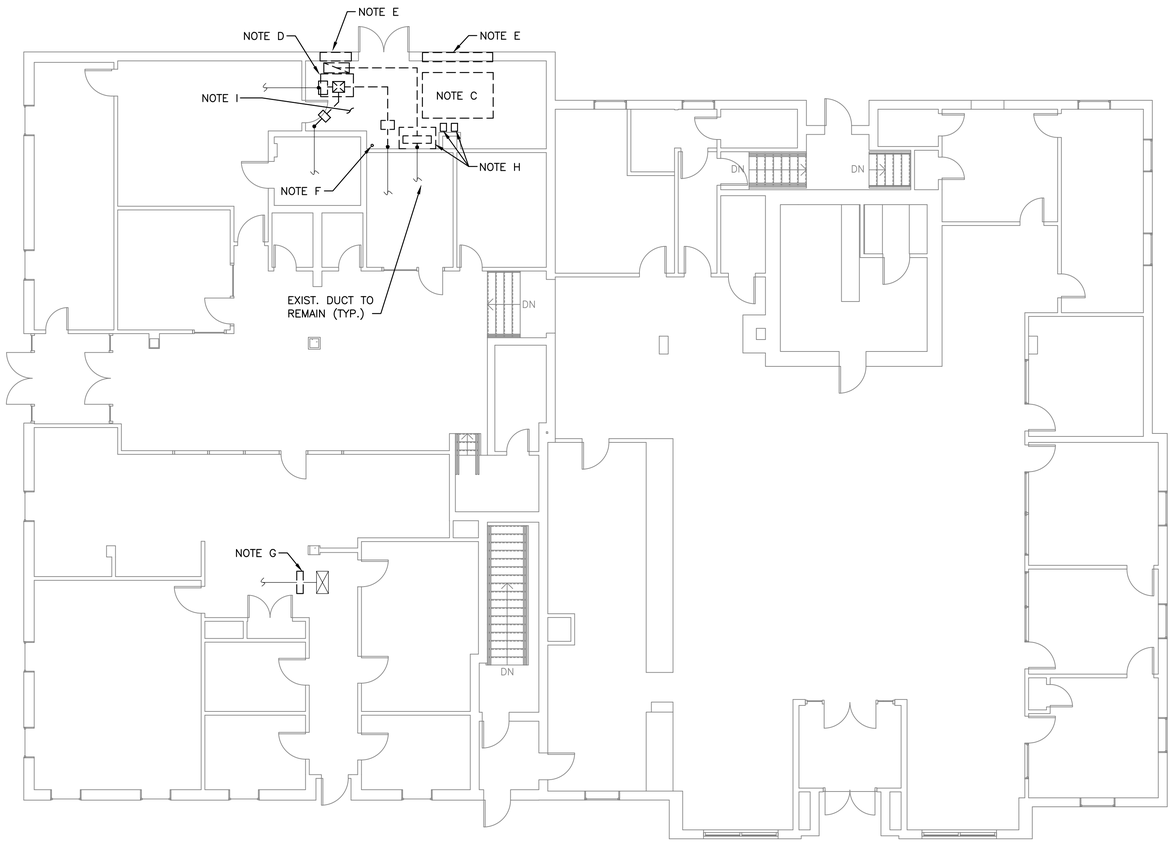
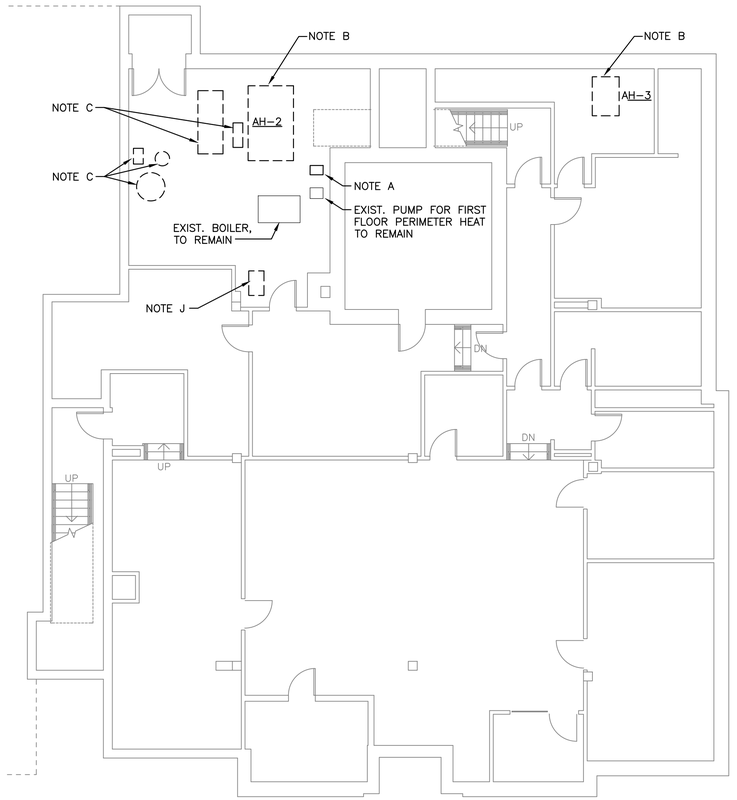
DEMO NOTES THIS SHEET

A. REMOVE HEATING PUMP THAT SERVES BASEMENT AIR HANDLERS. PUMP THAT SERVES PERIMETER HEAT TO REMAIN.
B. REMOVE AIR HANDLERS AH-2 AND AH-3. REMOVE ASSOCIATED CHILLED WATER COILS, HEATING COILS, RETURN FAN, PIPING, PUMP, AND CONTROLS. REMOVE DUCT CONNECTIONS AS REQUIRED FOR NEW EQUIPMENT.
C. REMOVE CHILLED WATER SYSTEM TO INCLUDE CHILLER, COOLING TOWER, TANKS, PUMPS, PIPING, AND ASSOCIATED COMPONENTS.
D. REMOVE AH-4/CU-4 SPLIT-SYSTEM TO INCLUDE AIR HANDLER, ROOF CONDENSING UNIT, REFRIGERANT LINES, CONTROLS, AND ASSOCIATED COMPONENTS. REMOVE DUCT CONNECTIONS AND DUCT HEATING COILS AND PREPARE FOR RECONNECTION TO NEW RTU DUCTS.
E. REMOVE LOUVERS AND INFILL WALL OPENING WITH MATCHING WALL CONSTRUCTION AND FINISH.
F. REMOVE 2" PLUMBING VENT THROUGH ROOF AND INSTALL AIR ADMITTANCE VALVE FOR SINK VENT.
G. REMOVE DUCT MOUNTED HEATING COIL AND ASSOCIATED HEATING WATER PIPES. REPAIR SUPPLY DUCT AND INSTALL DUCT SECTION WHERE COIL WAS REMOVED.
H. REMOVE GAS-FIRED BOILER, PUMPS, PIPING, FLUE, CONTROLS AND ASSOCIATED COMPONENTS OF HEATING WATER SYSTEM.
I. REMOVE AND RELOCATE PIPING, CONDUITS, AND ALL COMPONENTS AS REQUIRED FOR NEW DUCT ROOF OPENINGS.
J. REMOVE INCINERATOR, CONNECTIONS, AND ASSOCIATED COMPONENTS.



FIRST FLOOR PLAN - MECHANICAL DEMOLITION
1/8" = 1'-0"



BASEMENT PLAN - MECHANICAL DEMOLITION
1/8" = 1'-0"

DATE: NOV. 25, 2024

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MANN & ASSOCIATES, INC.
2247
306 Market Street
Roanoke, VA 24011
540-344-5513

PHASE 2 - HVAC REPLACEMENT for
MONTGOMERY MUSEUM
4 EAST MAIN STREET
CHRISTIANSBURG, VIRGINIA

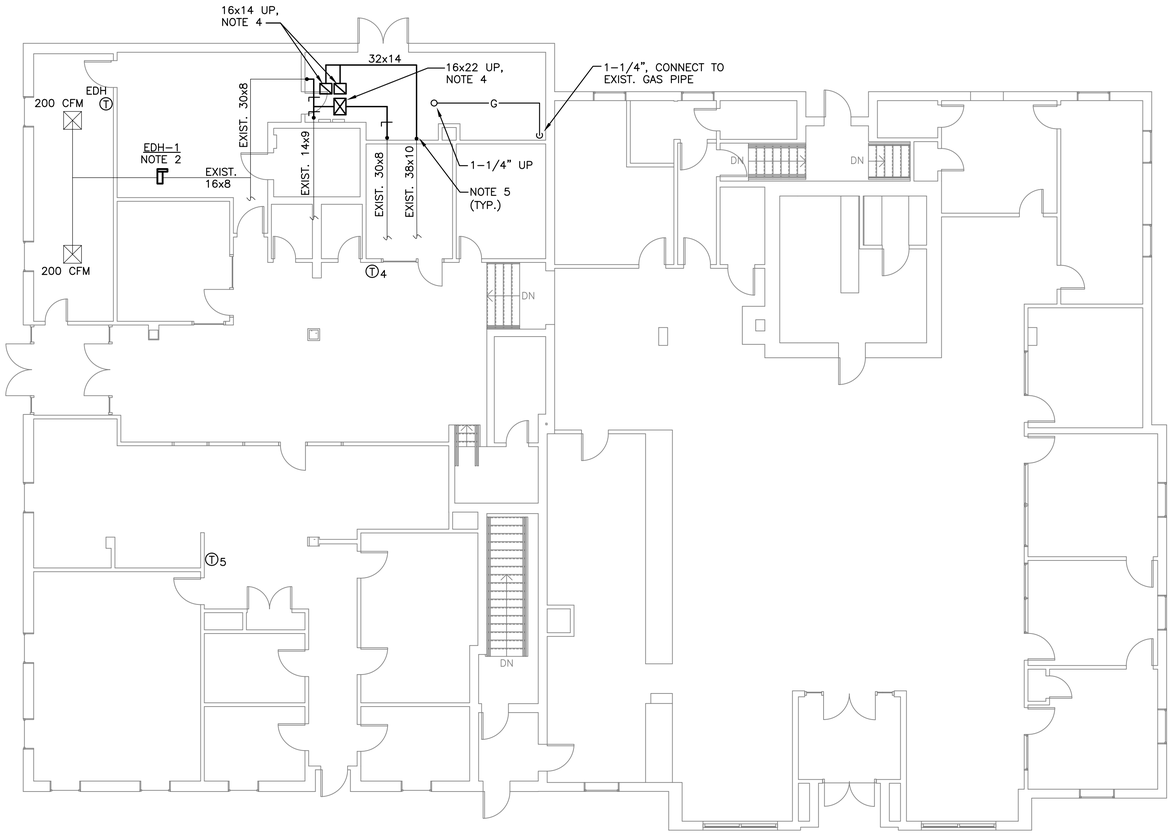
FIRST FLOOR & BASEMENT PLANS - MECHANICAL DEMOLITION

COMMONWEALTH OF VIRGINIA
JOHN M. MANN
Lic. No. 21023
11-25-24
PROFESSIONAL ENGINEER

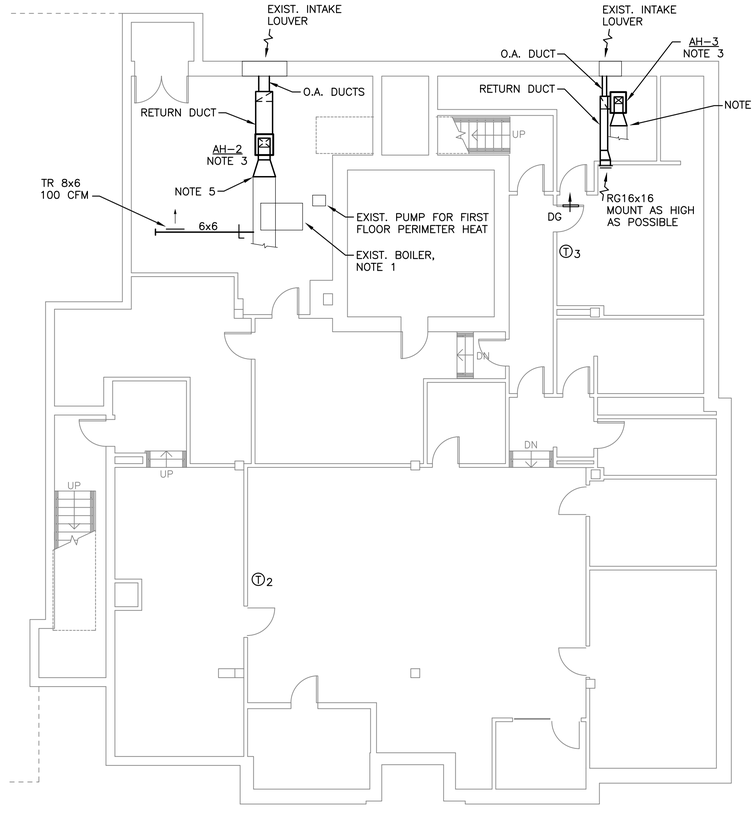
COMMISSION No.
2427
SHEET
MD1
MANN & ASSOCIATES, INC.

NOTES THIS SHEET

1. EXISTING BOILER TO REMAIN TO SERVE PERIMETER HEAT ON FIRST FLOOR. MAINTAIN ASSOCIATED HEATING PUMPS AND PIPING.
2. PROVIDE DUCT HEATER IN STRAIGHT SECTION OF EXISTING DUCT. PROVIDE LOW VOLTAGE ROOM THERMOSTAT ON WALL.
3. SEE AIR HANDLER INSTALLATION DETAIL ON SHEET M3.
4. DUCTS UP BETWEEN ROOF JOISTS. TRANSITION FOR CONNECTION TO ROOFTOP UNIT RTU-4. RELOCATE CONDUITS, PIPING, AND DEVICES AT CEILING AS REQUIRED FOR INSTALLATION OF ROOFTOP UNIT AND DUCTWORK.
5. VERIFY EXISTING DUCT SIZE PRIOR TO NEW DUCT FABRICATION. PROVIDE TRANSITION TO CONNECT TO EXISTING DUCT.



FIRST FLOOR PLAN - MECHANICAL
1/8" = 1'-0"



BASEMENT PLAN - MECHANICAL
1/8" = 1'-0"

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FIRST FLOOR AND BASEMENT PLANS - MECHANICAL

COMMONWEALTH OF VIRGINIA
JOHN M. MANN
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DEMO NOTES THIS SHEET

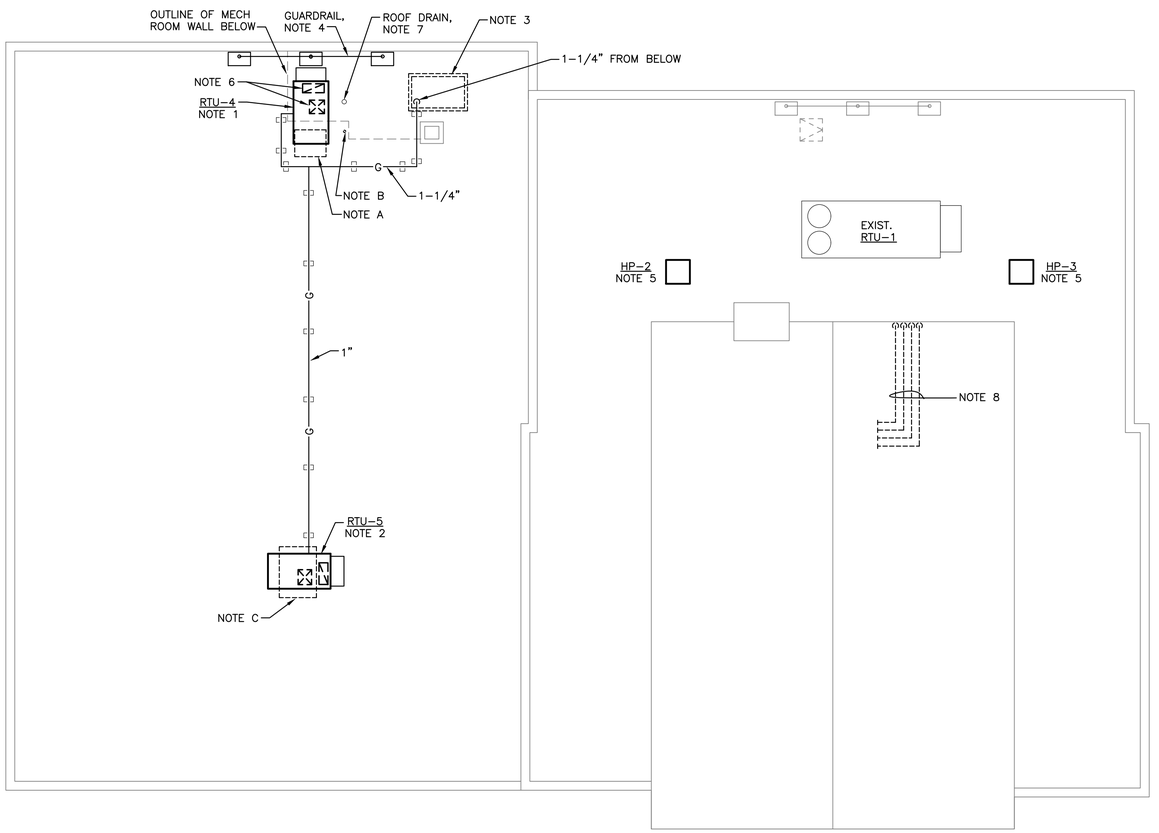
A. REMOVE CU-4 SPLIT-SYSTEM TO INCLUDE AIR HANDLER, ROOF CONDENSING UNIT, REFRIGERANT LINES, CONTROLS, AND ASSOCIATED COMPONENTS. PREPARE FOR NEW ROOFTOP UNIT.
B. REMOVE 2" PLUMBING VENT THROUGH ROOF AND PATCH ROOF.
C. REMOVE ROOFTOP UNIT AND ADAPTER CURB. PREPARE FOR REPLACEMENT.

NOTES THIS SHEET

1. NEW RTU-4 AND CURB. SEE STRUCTURAL DRAWINGS.
2. NEW RTU-5. PROVIDE ADAPTER CURB TO CONNECT TO EXISTING CURB. FLASH WATERTIGHT.
3. INFILL COOLING TOWER ROOF OPENING. SEE STRUCTURAL DRAWINGS. PROVIDE RIGID INSULATION ON TOP OF NEW METAL ROOF DECK. INSULATION TO MATCH EXISTING TYPE, THICKNESS, AND SLOPE. PROVIDE MATCHING, WATERTIGHT ROOF MEMBRANE FOR SMOOTH, FLUSH ROOF SURFACE THAT WILL NOT POND WATER.
4. PROVIDE 16' LENGTH NON-PENETRATING GUARDRAIL SYSTEM FOR PROTECTION AT RTU-4.
5. NEW HEAT PUMP UNIT ON 12" HIGH STAND BY DIVERSITECH/QUICKSLING. PROVIDE ROOF WALKPAD BELOW EACH STAND FOOT. LOCATE MINIMUM OF 10' FROM ROOF EDGE.
6. TRANSITION SUPPLY AND RETURN DUCT WITHIN ROOF CURB AND ROUTE DUCTS DOWN BETWEEN ROOF JOISTS. SEE FIRST FLOOR PLAN FOR DUCT SIZES.
7. MODIFY AND RELOCATE EXISTING ROOF DRAIN AND LEADER AS REQUIRED FOR INSTALLATION OF ROOFTOP UNIT AND ASSOCIATED DUCTWORK.
8. REMOVE CHILLED WATER AND HEATING WATER PIPES (4 PIPES) THAT SERVED OLD AIR HANDLER AND CAP AT ATTIC FLOOR.

MECHANICAL LEGEND

SYMBOL	DESCRIPTION
200	BALANCE TO 200 CFM
	RETURN OR EXHAUST REGISTER OR GRILLE
T	THERMOSTAT/SENSOR, MOUNT 48" AFF
MVD	MANUAL VOLUME DAMPER
MOD	MOTOR OPERATED DAMPER
EDH	ELECTRIC DUCT HEATER
RTU	ROOFTOP UNIT
AH	AIR HANDLER
HP	HEAT PUMP UNIT
G	GAS PIPE
EXIST.	EXISTING
TYP.	TYPICAL
CO2	CARBON DIOXIDE SENSOR



ROOF PLAN - MECHANICAL
1/8" = 1'-0"

GENERAL CONSTRUCTION NOTES

A. ALL WORK SHALL COMPLY WITH THE 2018 VIRGINIA UNIFORM STATEWIDE BUILDING CODE AND LOCAL REGULATIONS.

B. EQUIPMENT, MATERIALS AND LABOR SHALL INCLUDE A ONE YEAR WARRANTY.

C. REMOVE ALL DUCTWORK, PIPING, SUPPORTS, AND ASSOCIATED COMPONENTS IN THE ATTIC THAT ARE NOT BEING REUSED.

D. DRAWINGS ARE BASED ON ROUGH FIELD MEASUREMENTS OF EXISTING CONDITIONS. COORDINATE INSTALLATION WITH ALL TRADES AND ACTUAL CONDITIONS. FIELD VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING BID, FABRICATION OR ORDERING OF EQUIPMENT. PROVIDE NECESSARY DEMOLITION, MODIFICATIONS, AND NEW WORK AS REQUIRED FOR A COMPLETE INSTALLATION.

E. PATCH AND REPAIR BUILDING COMPONENTS THAT ARE DISTURBED UNDER THIS PROJECT. WHERE COMPONENTS ARE REMOVED IN FINISHES SPACES PATCH AND REPAIR SURFACES TO MATCH EXISTING. PAINT ENTIRE SURFACE TO THE NEAREST CHANGE OF DIRECTION.

F. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ANY REPAIRS REQUIRED DUE TO DAMAGES INCURRED AS A RESULT OF THE PERFORMANCE OF WORK ON THIS PROJECT.

G. PROVIDE MISCELLANEOUS SELECTIVE DEMOLITION OF EXISTING CONSTRUCTION AS REQUIRED FOR PROPER INSTALLATION OF THE PROPOSED CONSTRUCTION. THESE DRAWINGS DO NOT PURPORT TO SHOW ALL MISCELLANEOUS DEMOLITION. PATCH AND SEAL ALL NEW AND EXISTING OPENINGS IN FLOOR SLABS AND MASONRY WALLS IN AREA OF DEMOLITION AND NEW WORK.

H. PROVIDE TEMPORARY MEASURES AS REQUIRED TO PROTECT THE BUILDING, ROOF, AND INTERIOR FINISHES ADJACENT TO WORK UNDER THIS CONTRACT.

I. ROOF WORK SHALL BE PERFORMED BY A LICENSED ROOFING CONTRACTOR THAT IS CERTIFIED BY THE ROOF MEMBRANE MANUFACTURER. PROVIDE CUTTING, PATCHING, REPAIR, FLASHING, AND WALK PADS APPROVED BY ROOF MANUFACTURER. MATCH EXISTING ROOF INSULATION TYPE AND THICKNESS AND MAINTAIN SLOPE TO ROOF DRAINS.

J. PROVIDE MANUFACTURED NON-PENETRATING ROOF GUARDRAIL SYSTEM FOR PROTECTION AT NEW RTU. SYSTEM SHALL INCLUDE WEIGHTED BASES, POSTS, PIPE RAILINGS, END CAPS, FITTINGS, AND ASSOCIATED COMPONENTS FOR A COMPLETE FIELD ASSEMBLED SYSTEM. SYSTEM SHALL MEET ALL PERTINENT BUILDING CODE AND OSHA REGULATIONS. SUBMIT SHOP DRAWINGS FOR OWNER AND ENGINEER REVIEW AND APPROVAL.

DATE: NOV. 25, 2024

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ROOF TOP UNIT SCHEDULE (RTU)

UNIT	CFM	OUTSIDE AIR CFM	EXT. SP (IN WG)	SUPPLY FAN		COOLING CAPACITY				GAS HEATING CAPACITY		COMPRESSOR DATA			ELECTRICAL MCA/MOP	EFFICIENCY EER/IEER	SELECTION BASED ON LENNOX	AREA SERVED	NOTES	EST. UNIT WEIGHT LBS.
				FAN RPM	HP	TOTAL MBH	SENSIBLE MBH	EAT DB °F	EAT WB °F	INPUT MBH	OUTPUT MBH	QTY. – TYPE	V	PH						
RTU–4	2400	310	0.8	1230 TWO SPEED	1.5	68	56	80	67	150/113	121/92	1 VARIABLE	208	3	29/45	12.1/23.1	LGM–074	SECOND FLOOR	1 THRU 8	900
RTU–5	2400	310	0.8	1230 TWO SPEED	1.5	68	56	80	67	150/113	121/92	1 VARIABLE	208	3	29/45	12.1/23.1	LGM–074	SECOND FLOOR	1 THRU 7, 9	900

SCHEDULE NOTES:
1. LENNOX XION COMMERCIAL PACKAGED ROOFTOP UNIT, UL LISTED, INVERTER SCROLL COMPRESSOR, R–454B REFRIGERANT, DIRECT DRIVE FAN, INSULATED CABINET, ASHRAE 90.1 COMPLIANT, MERV 8 FILTER, 14" INSULATED CURB.
2. NATURAL GAS HEATER, TWO–STAGE WHERE INDICATED.
3. HUMIDITROL DEHUMIDIFICATION SYSTEM WITH HOT GAS REHEAT COIL.
4. LOW AMBIENT CONTROL KIT.
5. THERMOSTAT–7 DAY PROGRAMMABLE, 2–STAGE HEAT, 2–STAGE COOL, DEHUMIDIFICATION, PASSWORD PROTECTION.
6. COMPARATIVE ENTHALPY ECONOMIZER WITH BAROMETRIC RELIEF.
7. RETURN AIR DUCT SMOKE DETECTOR TO DEENERGIZE UNIT.
8. PROVIDE STRUCTURAL MODIFICATIONS FOR NEW RTU. SEE STRUCTURAL DRAWINGS.
9. COORDINATE WITH EXISTING ROOF OPENING AND PROVIDE ADDITIONAL SUPPORT STRUCTURE AND/OR ADAPTER CURB.

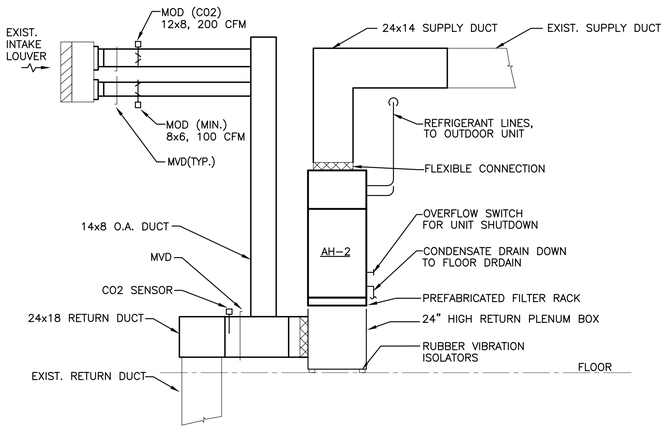
SPLIT–SYSTEM HEAT PUMP SCHEDULE

UNIT	SUPPLY FAN			AIR HANDLER ELECTRICAL				COOLING		HEATING		HP ELEC.			MINIMUM EFFICIENCY	SELECTION BASED ON LENNOX	NOTES
	SUPPLY CFM	ESP (IN. WATER)	MOTOR HP	VOLTAGE	PHASE	ELEC HEAT (KW)	HEATER AND FAN MCA/MOP	TOTAL (MBH)	SENSIBLE (MBH)	AT 47F (MBH)	AT 17F (MBH)	VOLTAGE	PHASE	MCA/MOP			
AH–2/HP–2	1900	0.8	1.0	208	1	15.0 AT 208V	95/100	60	46	60	45	208	1	33/35	SEER/HSPF 20.0/10.6	VARIABLE CAPACITY SL25 VARIABLE SPEED CBA38MV–60	1 THRU 9
AH–3/HP–3	800	0.6	1/2	208	1	6.0 AT 208V	41/45	24	18	24	14	208	1	19/30	SEER/HSPF 20/10	VARIABLE CAPACITY XP20 VARIABLE SPEED CBA38MV–24	1 THRU 8

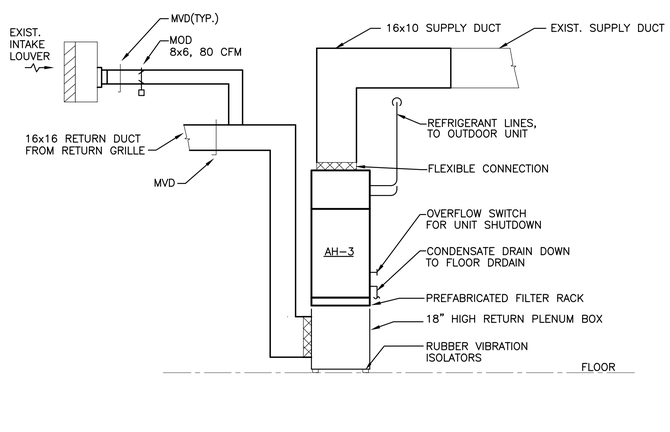
SCHEDULE NOTES:
1. AIR HANDLER–MULTIPOSITION, DIRECT DRIVE ECM VARIABLE SPEED MOTOR, COPPER TUBES, ALUMINUM FINS. LINEAR EXPANSION VALVE, SLOPED CONDENSATE PAN.
2. HEAT PUMP MATCHED WITH INDOOR COIL, VARIABLE SPEED INVERTER COMPRESSOR, R–410A OR R–454B REFRIGERANT, ENERGY STAR.
3. UL LISTED ELECTRIC HEATER KIT, SINGLE POINT ELECTRICAL CONNECTION, HIGH LIMIT CONTROLS.
4. THERMOSTAT – LENNOX S40 COMMUNICATING, HARD WIRED THERMOSTAT, DEHUMIDIFICATION SET FOR DRY MODE AND 2F OVERCOOL, 7 DAY PROGRAMMABLE HEAT PUMP THERMOSTAT, AUTO CHANGEOVER, ADAPTIVE RECOVERY. PROVIDE LOW VOLTAGE CONTROL WIRING TO OUTSIDE AIR DAMPERS.
5. PROVIDE CONDENSATE OVERFLOW DETECTION SWITCH IN OVERFLOW DRAIN CONNECTION TO DE–ENERGIZE AIR HANDLER.
6. AIR HANDLERS SHALL BE VERTICAL CONFIGURATION. FILTER RACK WITH HINGED AND GASKETED DOOR FOR PREMANUFACTURED 1" MERV 8 FILTER.
7. PROVIDE LOCKING REFRIGERANT SERVICE CAPS ON ALL HEAT PUMP SERVICE VALVES.
8. MOTOR OPERATED DAMPER FOR MINIMUM OUTSIDE AIR SHALL BE TWO POSITION (OPEN/CLOSE). DAMPER INTERLOCKED TO OPEN IN OCCUPIED DAYTIME MODE.
9. PROVIDE CO2 CONTROLLER EQUAL TO HONEYWELL C7232. CO2 SENSOR IN RETURN AIR DUCT, AND WIRING FOR DEMAND CONTROL VENTILATION. OPEN OUTSIDE AIR DAMPER FOR MAXIMUM OUTSIDE AIR BASED ON AN INCREASE IN RETURN AIR CO2.

MECHANICAL EQUIPMENT

ELECTRIC DUCT HEATER (EDH–1): DUCT MOUNTED, 3000 WATTS, 208 VOLTS, SINGLE PHASE, 12x8, 400 CFM, 24F RISE. VERIFY EXISTING DUCT SIZE AND PROVIDE TRANSITION AS REQUIRED. PROVIDE HEATER WITH AIRFLOW SWITCH, SAFETIES, DISCONNECT SWITCH, TRANSFORMER, AND LOW–VOLTAGE WALL THERMOSTAT.



AH–2 INSTALLATION DETAIL
NOT TO SCALE



AH–3 INSTALLATION DETAIL
NOT TO SCALE

MECHANICAL OUTLINE SPECIFICATIONS

1. ALL WORK SHALL COMPLY WITH THE 2018 VIRGINIA UNIFORM STATEWIDE BUILDING CODE.
2. PROVIDE COMPLETE SUBMITTAL INFORMATION FOR EQUIPMENT AND DEVICES.
3. RECORD ALL CHANGES IN THE WORK ON THE PROJECT RECORD DRAWINGS.
4. PROVIDE DETAILED OPERATION AND MAINTENANCE MANUALS FOR ALL EQUIPMENT.
5. MECHANICAL EQUIPMENT, MATERIALS AND LABOR SHALL INCLUDE A ONE YEAR WARRANTY AND FIVE YEAR COMPRESSOR WARRANTY.
6. DRAWINGS INDICATE GENERAL LAYOUT OF PIPING, DUCTWORK AND EQUIPMENT. THE CONTRACTOR SHALL INVESTIGATE ALL STRUCTURAL, ELECTRICAL AND FINISH CONDITIONS AFFECTING THE WORK AND SHALL ARRANGE THE MECHANICAL WORK ACCORDINGLY. PROVIDE ADDITIONAL FITTINGS, OFFSETS AND TRANSITIONS AS REQUIRED TO PROPERLY COMPLETE THE WORK, WHETHER OR NOT SUCH COMPONENTS ARE INDICATED ON THE DRAWINGS.
7. ALL WORK SHALL BE NEW AND IS INCLUDED IN THE CONTRACT UNLESS SPECIFICALLY NOTED TO BE EXISTING OR NOT IN CONTRACT.
8. FIELD VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING BID, FABRICATION OR ORDERING OF EQUIPMENT.
9. MOST EXISTING DUCTWORK AND PIPING IS NOT SHOWN ON THESE DRAWINGS. WHERE EXISTING DUCTWORK AND PIPING IS SHOWN, IT IS FOR INFORMATION PURPOSES AND IS BASED ON EXISTING DRAWINGS. VERIFY EXISTING CONSTRUCTION IN THE FIELD PRIOR TO BIDDING AND CONSTRUCTION. IF EXISTING DUCTWORK OR PIPING ARE SMALLER THAN INDICATED SIZE, NOTIFY THE A/E IMMEDIATELY.
10. THE EXISTING BUILDING WILL BE OCCUPIED DURING THE ENTIRE PERIOD OF CONSTRUCTION. COORDINATE ALL WORK WITH THE OWNER IN ORDER TO MINIMIZE DISRUPTION OF THE USE OF THE EXISTING BUILDING.
11. IN ADDITION TO DEMOLITION WORK INDICATED, PROVIDE MISCELLANEOUS SELECTIVE DEMOLITION OF EXISTING CONSTRUCTION AS REQUIRED FOR PROPER INSTALLATION OF THE PROPOSED CONSTRUCTION. REMOVE ALL COMPONENTS WHICH ARE NOT REQUIRED FOR THE PROPOSED CONSTRUCTION, INCLUDING HANGERS, ANCHORS, MOUNTING BRACKETS, AND OTHER MISCELLANEOUS COMPONENTS. THESE DRAWINGS DO NOT PURPORT TO SHOW ALL MISCELLANEOUS DEMOLITION.
12. CONFIRM LOCATION OF EXISTING AND NEW ELECTRICAL PANELBOARDS. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL PANELBOARDS.
13. COORDINATE INSTALLATION OF EQUIPMENT AND OTHER DEVICES TO PROVIDE ACCESS FOR SERVICING.
14. PROVIDE ALL MISCELLANEOUS COMPONENTS REQUIRED FOR A COMPLETE AND PROPER INSTALLATION, WHETHER OR NOT THESE COMPONENTS ARE SPECIFIED HEREIN.
15. GALVANIZED SHEET METAL DUCTWORK CONSTRUCTION SHALL COMPLY WITH SMACNA STANDARDS WITH TURNING VANES OR LONG RADIUS ELBOWS AND MANUAL DAMPERS FOR BALANCING. AT EACH TAKEOFF TO A SUPPLY DIFFUSER, PROVIDE LOW–LOSS CONICAL OR TAPERED 45 DEGREE RECTANGULAR BRANCH TAKEOFF WITH MANUAL DAMPER. MANUAL VOLUME DAMPER TO HAVE LOCKING HANDLE WITH EXTENDED SHAFT AND STANDOFF FOR INSULATION THICKNESS. DUCTS SHALL BE FASTENED AND SEALED PER MECHANICAL CODE AND ENERGY CODE FOR 2.0 INCHES STATIC PRESSURE AND SMACNA SEAL CLASS A.
16. INSULATE ALL SUPPLY AND RETURN AIR DUCTWORK. SEAL ALL INSULATION JOINTS VAPOR TIGHT. INSULATE WITH FIBERGLASS DUCT WRAP WITH ALL SERVICE VAPOR BARRIER JACKET. FLAME SPREAD/SMOKE DEVELOPED INDEX OF 25/50 MAXIMUM. K–VALUE OF 0.36, MINIMUM INSTALLED R6. DUCTWORK IN ATTIC SHALL HAVE MINIMUM INSTALLED R8 INSULATION PER ENERGY CODE. INSULATE EXTERIOR DUCTS WITH 6 LBS/CUFT RIGID DUCT INSULATION, MINIMUM R8, AND COVER WITH WATERTIGHT ALUMINUM SHEET METAL JACKET.
17. PROVIDE IDENTIFICATION MARKINGS FOR EQUIPMENT, PIPING, AND CONTROLS. NAMEPLATES SHALL BE PLASTIC LAMINATE WITH 1/4" LETTERS.
18. CONDENSATE LINES TO BE PVC WITH TRAP AND CLEANOUT TEE AT COOLING COIL. RIGIDLY SUPPORT CONDENSATE PIPE FROM UNIT TO ROOF DRAIN.
19. GAS PIPING SHALL BE BLACK CARBON STEEL WITH THREADED FITTINGS. PROVIDE GAS COCK VALVE AND DRIP LEG AT EACH PIECE OF EQUIPMENT. SUPPORT GAS PIPE ON ROOF AT MAXIMUM 8' SPACING WITH CADDY PYRAMID PIPE SUPPORT BY NVENT. EXTERIOR ABOVE GRADE GAS PIPING SHALL BE PAINTED TO MATCH ADJACENT WALL COLOR AND STANDARD YELLOW WHERE LOCATED ON ROOF. LABEL GAS PIPING AT 20' INTERVALS PER ASTM A13.1. TEST AND PURGE GAS LINES PER VIRGINIA FUEL GAS CODE, SECTION 406.
20. PROVIDE NON–PENETRATING ROOF SUPPORTS FOR DUCTS, GAS PIPES, CONDENSATE PIPES, CONDUITS, AND WHERE REQUIRED FOR OTHER COMPONENTS. ROOF SUPPORTS TO BE EQUAL TO CADDY PYRAMID BY NVENT WITH GALVANIZED UNISTRUCT. PROVIDE ROOF WALK PAD UNDERNEATH EACH SUPPORT. PAD TO BE MANUFACTURER APPROVED FOR USE WITH EXISTING ROOF MEMBRANE, AND WHITE COLOR.
21. PROVIDE FLEXIBLE CONNECTORS AT CONNECTION OF DUCTWORK TO RTU.
22. INSTALL PIPING AND PIPE HANGERS PER ASME B31.9. SUPPORT PIPING AND SPACE HANGERS IN ACCORDANCE WITH VIRGINIA MECHANICAL CODE, TABLE 305.4.
23. DUCT SMOKE DETECTOR IN MAIN RETURN DUCT OR IN RTU SHALL DEENERGIZE RTU FANS. PROVIDE UL LISTED REMOTE TEST STATION WITH AUDIBLE/VISUAL ALARM, LOCATED IN OCCUPIED AREA.
24. TEST AND BALANCE ALL EQUIPMENT FOR PROPER OPERATION, AIRFLOW, CAPACITY, ACCEPTABLE SPACE TEMPERATURES AND NOISE LEVELS. PERFORM TAB AND RECORD RESULTS PER AABC OR NEBB STANDARDS AND SUBMIT FOR REVIEW. INDEPENDENT CERTIFIED TAB CONTRACTOR SHALL BE USED.
25. START–UP EQUIPMENT AND PERFORM FUNCTIONAL TEST IN HEATING, COOLING, DEHUMIDIFICATION MODES. COMPLETE START–UP IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND PROVIDE REPORT IN O&M MANUALS. PROGRAM CONTROLS AND INSTRUCT OWNER'S MAINTENANCE PERSONNEL ON THE OPERATION OF EQUIPMENT AND CONTROLS. PROVIDE FINAL FILTER CHANGE.

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SCHEDULES AND SPECS. - MECHANICAL

COMMONWEALTH OF VIRGINIA
JOHN M. MANN
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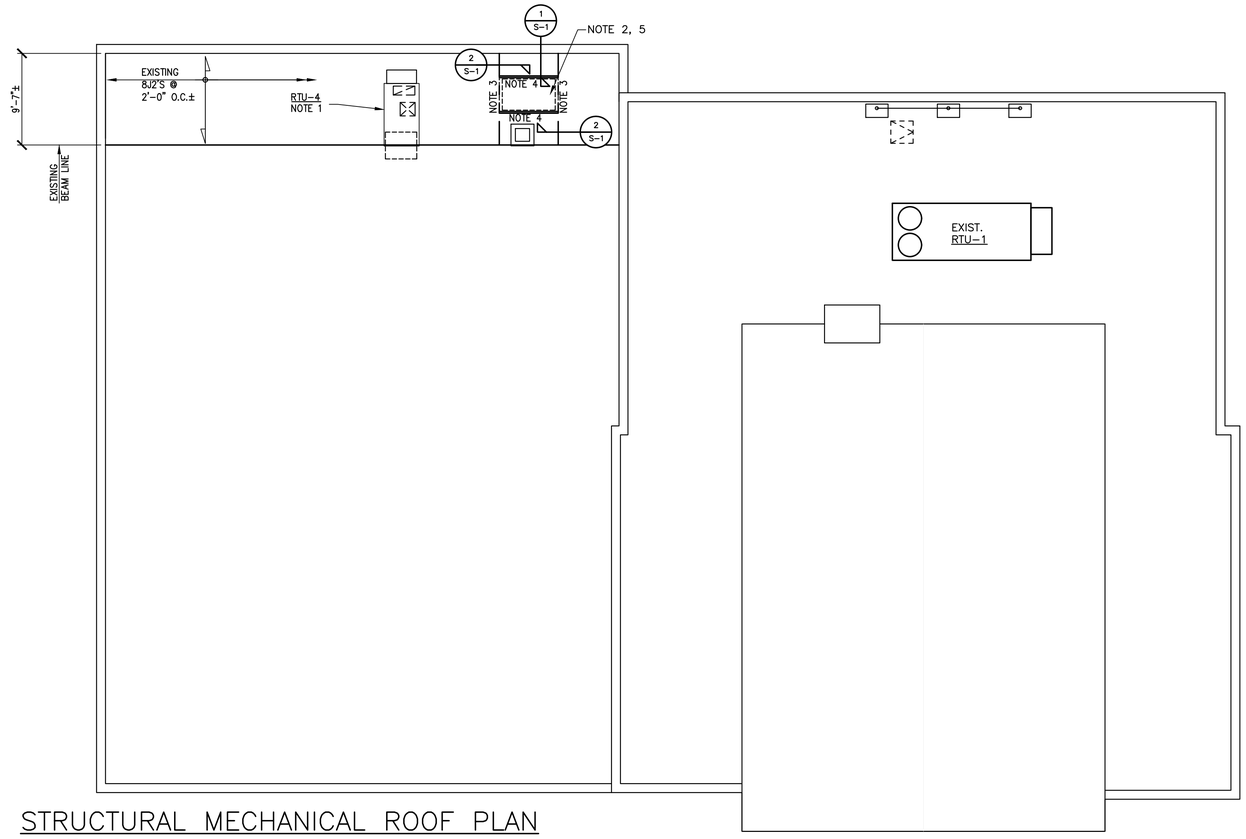


STRUCTURAL MECHANICAL ROOF PLAN

SCALE: 1/8" = 1'-0"

NOTES:

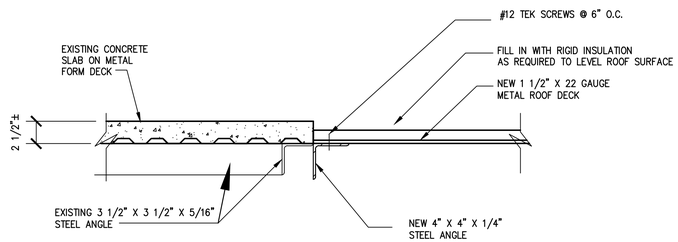
1. NEW RTU. APPROXIMATE WEIGHT 812 LBS. NEW CURB CAN BE PLACED DIRECTLY ON CONCRETE ROOF SLAB. SUPPLY AND RETURN OPENINGS TO BE FIELD CUT THRU EXISTING CONCRETE SLAB AS SHOWN ON MECHANICAL DRAWINGS. G.C. TO COORDINATE LOCATIONS OF EXISTING 8J2 ROOF JOISTS PRIOR TO PLACEMENT OF UNIT TO ALIGN WITH SUPPLY AND RETURN OPENINGS SHOWN ON MECHANICAL DRAWINGS.

2. EXISTING 48" X 78" ROOF OPENING. G.C. FIELD CONFIRM/VERIFY ROOF OPENING SIZE.

3. EXISTING 8J2 ROOF JOIST.

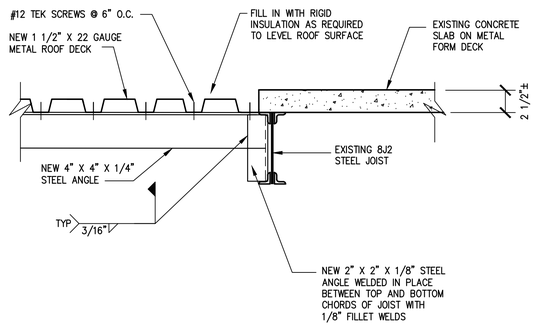
4. NEW 4" X 4" X 1/4" STEEL ANGLE.

5. NEW 1 1/2" X 22 GAUGE METAL ROOF DECK.



1 S-1 SECTION

SCALE: N.T.S.



2 S-1 SECTION

SCALE: N.T.S.

COMMONWEALTH OF VIRGINIA
JAMES F. KINDER, JR.
Lic. No. 015761
11-25-2024
PROFESSIONAL ENGINEER

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PHONE: 540 774-5706 • EMAIL: jay@dayandkinder.com
COMM. NO. 24-156

DATE: NOV. 25, 2024

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PHASE 2 - HVAC REPLACEMENT for
MONTGOMERY MUSEUM
4 EAST MAIN STREET
CHRISTIANSBURG, VIRGINIA

STRUCTURAL MECHANICAL ROOF PLAN

COMMISSION No.
2427
SHEET
S-1

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DEMOLITION PLAN NOTES:

DN1 - DISCONNECT COOLING TOWER AND PUMPS, REMOVE STARTERS, CONDUIT AND WIRE TO SOURCE. LABEL CIRCUIT BREAKER AS SPARE.

DN2 - DISCONNECT GAS FIRED BOILER AND ASSOCIATED PUMPS, CONTROLS. CONDUIT AND WIRE TO SOURCE. LABEL CIRCUIT BREAKERS AS SPARE.

DN3 - DISCONNECT AIR HANDLER AH-4 AND CONDENSING UNIT CU-4 REMOVE STARTER, CONDUIT AND WIRE TO SOURCE. LABEL CIRCUIT BREAKER AS SPARE.

DN4 - DISCONNECT CHILLER, REMOVE DISCONNECT SWITCH, CONDUIT AND WIRE TO SOURCE

DN5 - DISCONNECT AIR HANDLER AH-2, REMOVE DISCONNECT SWITCH, CONDUIT AND WIRE TO SOURCE.

DN6 - DISCONNECT HOT WATER PUMP No 1, REMOVE STARTER, CONDUIT AND WIRE TO SOURCE.

DN7 - DISCONNECT AIR HANDLER AH-3 REMOVE STARTER, CONDUIT AND WIRE TO SOURCE. LABEL CIRCUIT BREAKER AS SPARE.

DN8 - DISCONNECT CHILLED WATER PUMP, REMOVE STARTER, CONDUIT AND WIRE TO SOURCE. LABEL CIRCUIT BREAKER AS SPARE.

DN9 - DISCONNECT COOLING TOWER PUMP, REMOVE STARTER, CONDUIT AND WIRE TO SOURCE. LABEL CIRCUIT BREAKER AS SPARE.

GENERAL DEMOLITION NOTES:

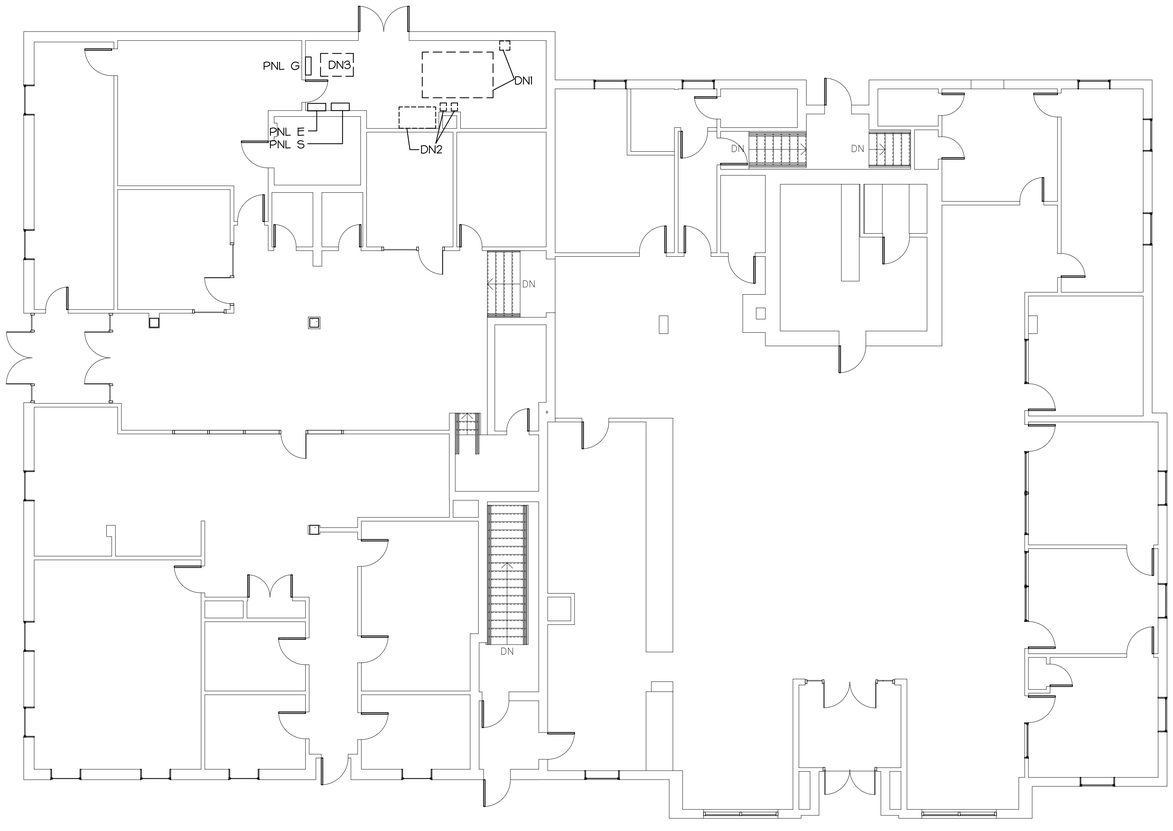
PRIOR TO DEMOLITION VERIFY THE SOURCE ALL ELECTRICAL CIRCUITS SERVING THE EXISTING HVAC EQUIPMENT.

SEE MECHANICAL PLANS FOR ADDITIONAL DEMOLITION REQUIREMENTS.

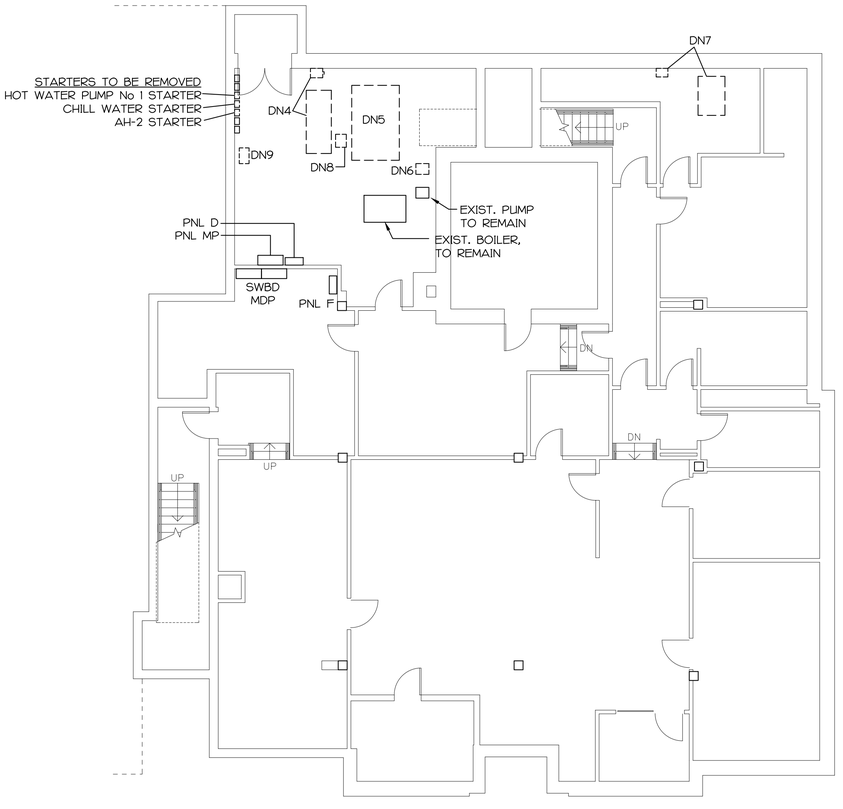
PROVIDE WIRING AS REQUIRED TO MAINTAIN POWER FOR EXISTING ELECT. DEVICES AND EQUIPMENT WHICH ARE TO REMAIN, INCLUDING DEVICES AND EQUIP. THAT MAY BE OUTSIDE THE WORK AREA.

THE EXISTING BUILDING WILL BE OCCUPIED BY THE OWNER DURING THE ENTIRE PERIOD OF CONSTRUCTION. ORGANIZE AND SCHEDULE ALL POWER INTERRUPTIONS WITH THE OWNER, TO MINIMIZE DISRUPTION OF THE OWNER'S USAGE AND SCHEDULES, AND TO MINIMIZE THE TIME PERIODS DURING WHICH BUILDING SERVICES ARE INTERRUPTED. ALL INTERRUPTIONS OF SERVICES SHALL BE APPROVED IN ADVANCE BY THE OWNER, AND SHALL BE SCHEDULED FOR THE OWNER'S CONVENIENCE.

EXISTING CONDUITS MAY BE USED FOR NEW WORK.



FIRST FLOOR PLAN - ELECTRICAL DEMOLITION
1/8" = 1'-0"



BASEMENT PLAN - ELECTRICAL DEMOLITION
1/8" = 1'-0"

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PHASE 2 – HVAC REPLACEMENT for
MONTGOMERY MUSEUM
4 EAST MAIN STREET
CHRISTIANSBURG, VIRGINIA

FIRST FLOOR & BASEMENT PLANS - ELECTRICAL DEMOLITION

COMMONWEALTH OF VIRGINIA
W. BOYCE BLANCHARD
Lic. No. 25678
25 NOV 2024
PROFESSIONAL ENGINEER

COMMISSION No.
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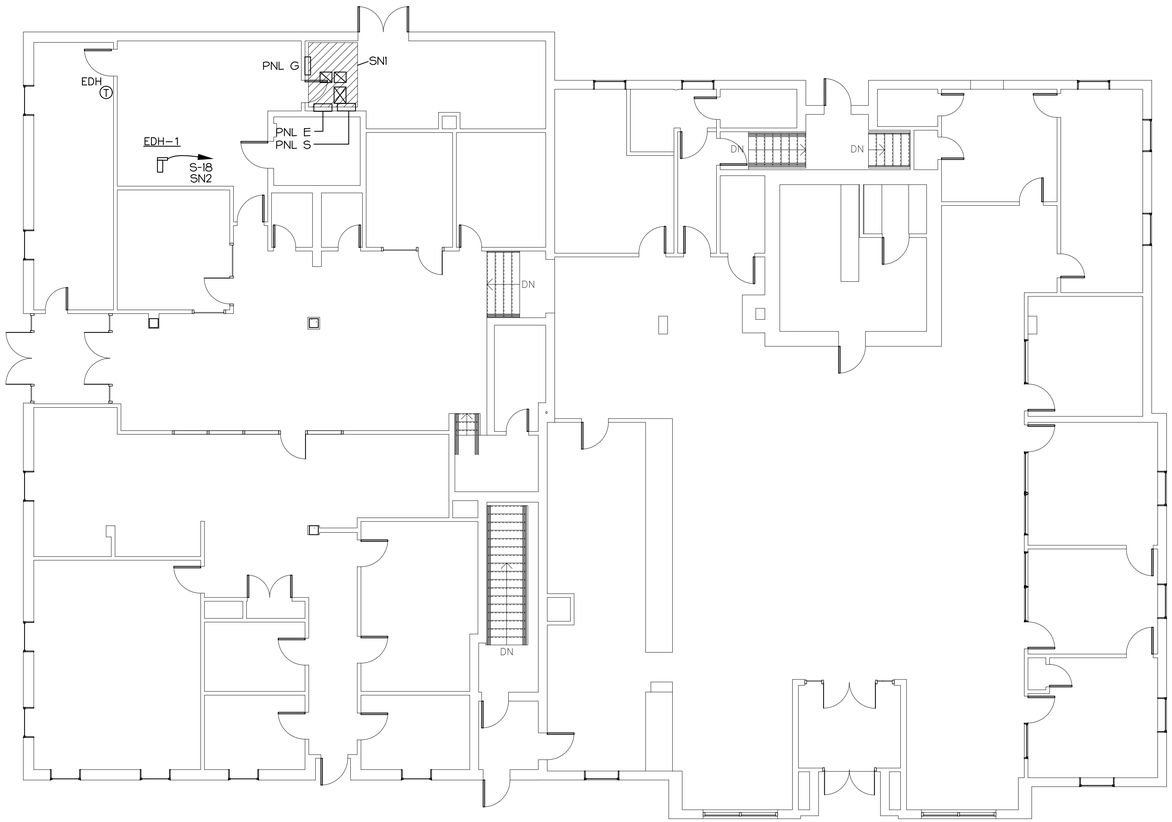
NEW WORK SHEET NOTES:

SN1 - CONDUITS, BOXES AND WIRE IN THIS AREA WILL HAVE TO BE RE-WORKED FOR INSTALLATION OF MECHANICAL DUCTWORK.

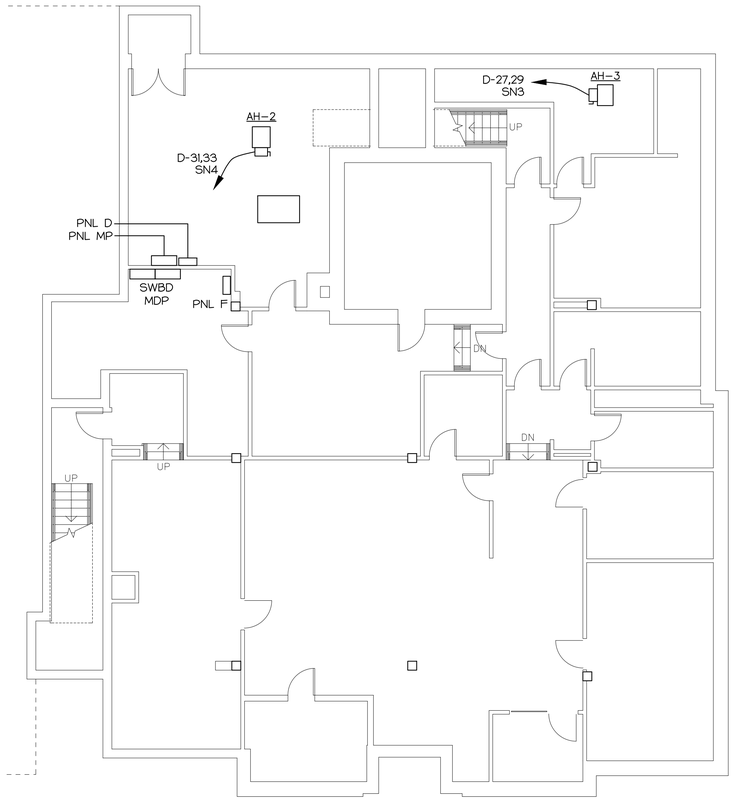
SN2 - 2#12, 1#12G, 1/2" CND TO PANEL S. PROVIDE A 20A/2P CIRCUIT BREAKER IN PANEL S AT POLE SPACES 16,18. REVISE PANEL DIRECTORY WITH NEW LOAD DESCRIPTION.

SN3 -AT AH-3 PROVIDE A 60A/2P NEMA 1 NON FUSED DISCONNECT SWITCH WITH 2#3, 1#8G, 1" CND TO PANEL D. PROVIDE A 45A/2P CIRCUIT BREAKER IN PANEL D AT POLE SPACES 27,29. REMOVE 20A/3P BREAKER. REVISE PANEL DIRECTORY WITH NEW LOAD DESCRIPTION.

SN4 -AT AH-2 PROVIDE A 100A/2P NEMA 1 NON FUSED DISCONNECT SWITCH WITH 2#3, 1#8G, 1" CND TO PANEL D. PROVIDE A 100A/2P CIRCUIT BREAKER IN PANEL D AT POLE SPACES 31,33. REMOVE 40A/3P BREAKER. REVISE PANEL DIRECTORY WITH NEW LOAD DESCRIPTION.



FIRST FLOOR PLAN - ELECTRICAL
1/8" = 1'-0"



BASEMENT PLAN - ELECTRICAL
1/8" = 1'-0"

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PHASE 2 – HVAC REPLACEMENT for
MONTGOMERY MUSEUM
4 EAST MAIN STREET
CHRISTIANSBURG, VIRGINIA

FIRST FLOOR AND BASEMENT PLANS - ELECTRICAL

COMMONWEALTH OF VIRGINIA
W. BOYCE BLANCHARD
Lic. No. 25678
25 NOV 2024
PROFESSIONAL ENGINEER

COMMISSION No.
2427
SHEET
E1

NEW WORK SHEET NOTES:

SN1 - DISCONNECT EXISTING RTU-5, REMOVE WIRE TO SOURCE AND LABEL BREAKER AS SPARE. PORTIONS OF EXISTING CONDUIT MAY BE USED FOR FEED TO NEW RTU-5.

SN2 - AT NEW RTU-5 PROVIDE A 60A/3P NEMA 3R NON FUSED DISCONNECT SWITCH WITH 3#10, 1#12G, 3/4" CND TO PANEL E. PROVIDE A 45A/3P CIRCUIT BREAKER IN PANEL E AT POLE SPACES 38,40,42. REMOVE 70A/3P BREAKER. REVISE PANEL DIRECTORY WITH NEW LOAD DESCRIPTION.

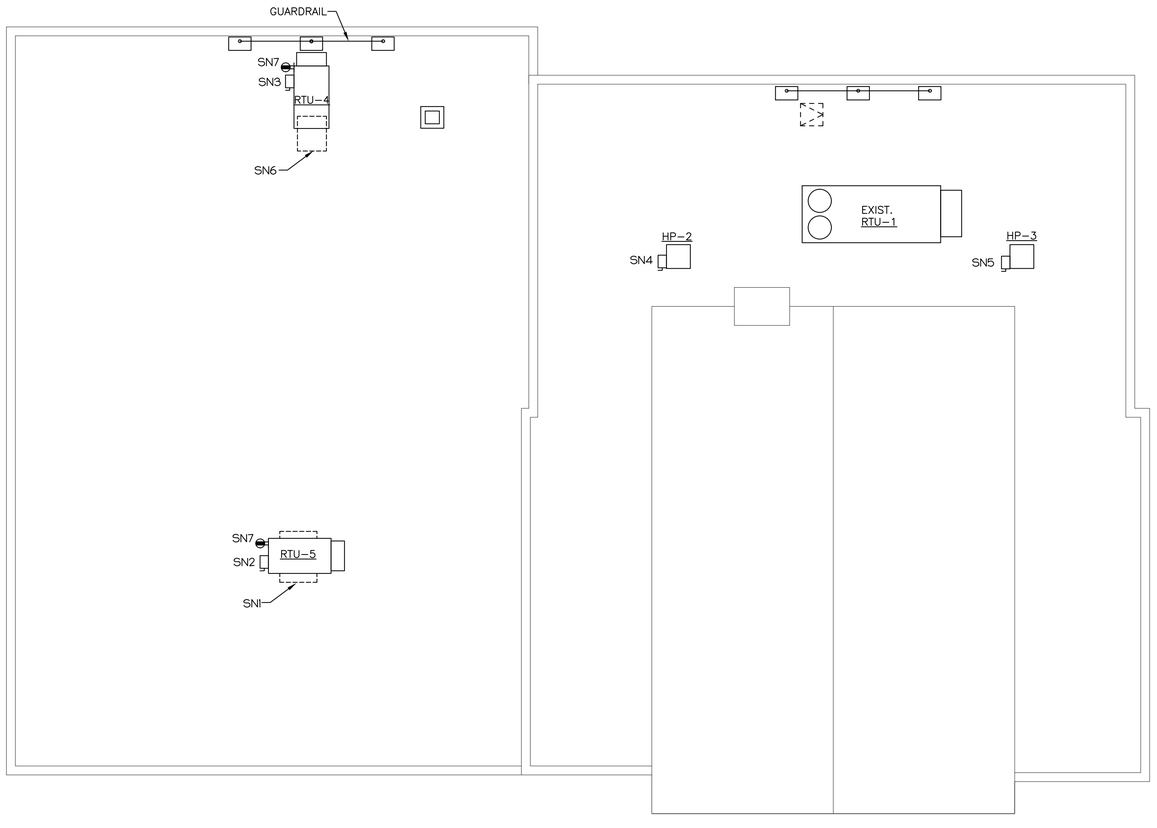
SN3 - AT NEW RTU-4 PROVIDE A 60A/3P NEMA 3R NON FUSED DISCONNECT SWITCH WITH 3#10, 1#12G, 3/4" CND TO PANEL E. PROVIDE A 45A/3P CIRCUIT BREAKER IN PANEL E AT POLE SPACES 27,29,31. REMOVE 40A/3P BREAKER. REVISE PANEL DIRECTORY WITH NEW LOAD DESCRIPTION.

SN4 - AT NEW HP-2 PROVIDE A 60A/2P NEMA 3R NON FUSED DISCONNECT SWITCH WITH 2#8, 1#10G, 3/4" CND TO PANEL D. PROVIDE A 60A/2P CIRCUIT BREAKER IN PANEL D AT POLE SPACES 23,25. REVISE PANEL DIRECTORY WITH NEW LOAD DESCRIPTION.

SN5 - AT NEW HP-3 PROVIDE A 30A/2P NEMA 3R NON FUSED DISCONNECT SWITCH WITH 2#10, 1#12G, 3/4" CND TO PANEL D. PROVIDE A 25/2P CIRCUIT BREAKER IN PANEL D AT POLE SPACES 19,21. REVISE PANEL DIRECTORY WITH NEW LOAD DESCRIPTION.

SN6 - DISCONNECT EXISTING CONDENSING UNIT CU-4, REMOVE WIRE TO SOURCE AND LABEL BREAKER AS SPARE. PORTIONS OF EXISTING CONDUIT MAY BE USED FOR FEED TO NEW RTU-4.

SN7 - PROVIDE A 20A WEATHER RESISTANT GFI RECEPTACLE WITH A METAL IN-USE WP COVER. PROVIDE 2#12, 1#12G, 1/2" CND TO EXISTING 20A/1P CIRCUIT BREAKER NO. 21 IN PANEL E. REVISE PANEL DIRECTORY WITH NEW LOAD DESCRIPTION.



ROOF PLAN - ELECTRICAL
1/8" = 1'-0"

DATE: 11/25/24

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PHASE 2 - HVAC REPLACEMENT for
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ROOF PLAN - ELECTRICAL

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COMMISSION No.
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ELECTRICAL SPECIFICATIONS

GENERAL: THE SPECIFICATIONS ARE INTENDED TO CONVEY THE SCOPE OF WORK AND TO INDICATE THE GENERAL REQUIREMENTS FOR THE EQUIPMENT AND IT'S INSTALLATION. THE CONTRACTOR SHALL PROVIDE QUALIFIED SUPERVISION, LABOR, EQUIPMENT, MATERIALS AND OTHER ITEMS NECESSARY FOR A SAFE, COMPLETE AND FUNCTIONING ELECTRICAL SYSTEM WHETHER OR NOT ALL INCIDENTAL MATERIAL OR EQUIPMENT IS INDICATED HEREIN.

WHEREVER THE WORD "PROVIDE" IS USED IN THESE SPECIFICATIONS OR ON THE DRAWINGS IT SHALL MEAN "THE CONTRACTOR IS TO PROVIDE AND INSTALL COMPLETE AND READY FOR INTENDED USE BY THE OWNER". THE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW ALL DETAILS NECESSARY FOR A COMPLETE ELECTRICAL SYSTEM. THE CONTRACTOR SHALL PROVIDE ALL ITEMS REQUIRED FOR COMPLETE AND FUNCTIONAL SYSTEMS. PROJECT SPECIFICATIONS AND DRAWINGS SHALL BE EXAMINED BY THE ELECTRICAL CONTRACTOR, TO DETERMINE ELECTRICAL SYSTEM'S INTERFACE AND CONDITIONS WHICH COULD CAUSE INTERFERENCE OR DEVIATIONS IN EQUIPMENT LOCATIONS OR ROUTING.

REGULATIONS AND ORDINANCES:
ALL ELECTRICAL WORK SHALL BE INSTALLED IN STRICT COMPLIANCE WITH THE 2018 VIRGINIA CONSTRUCTION CODE. THE INSTALLATION SHALL COMPLY WITH THE 2020 NATIONAL ELECTRICAL CODE (NEC), EQUIPMENT AND MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH THE FOLLOWING STANDARDS, WHERE APPLICABLE:
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
UNDERWRITER'S LABORATORIES (UL)

ALL EQUIPMENT AND MATERIAL USED ON THIS PROJECT SHALL BE NEW AND LISTED BY THE UNDERWRITER'S LABORATORIES, ELECTRICAL TESTING LABORATORIES, INC. OR OTHER RECOGNIZED TESTING AGENCY AND SHALL BEAR THEIR LABEL.

EQUIPMENT CONNECTIONS:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL DISTRIBUTION EQUIPMENT AND WIRING REQUIRED TO SERVE ALL EQUIPMENT SHOWN ON THE CONTRACT DOCUMENTS. CONNECTIONS SHALL BE MADE TO MECHANICAL HVAC EQUIPMENT.

SUPPORTS AND HANGERS:
THE CONTRACTOR SHALL PROVIDE ALL SUPPORTS AND HANGER MATERIALS REQUIRED TO SUPPORT CONDUIT, BOXES, FIXTURES AND EQUIPMENT REQUIRED FOR THIS PROJECT. HANGER/SUPPORT SPACING SHALL BE AS REQUIRED IN THE NEC. MATERIALS USED SHALL BE NEW AND APPROVED FOR THE PURPOSE.

WIRE:
PROVIDE WIRE AND CABLE SUITABLE FOR THE LOCATION WHERE INSTALLED. USE BUILDING WIRE WITH 600 VOLT INSULATION. SIZE ALL CONDUCTORS TO COMPLY WITH NEC REQUIREMENTS FOR VOLTAGE DROP. MINIMUM CONDUCTOR SIZE SHALL BE NO. 12 AWG.

ALL CONDUCTORS SHALL BE COPPER UNLESS NOTED OTHERWISE.

CONDUIT:
CONDUITS SHALL BE SECURELY FASTENED. A MAXIMUM OF FOUR 90-DEGREE BONDS BETWEEN ANY TWO BOXES, FIXTURES OR PANELS SHALL BE PERMITTED FOR EACH CONDUIT RUN. 3/4" MINIMUM

CONDUIT FOR POWER SHALL BE ELECTRICAL METALLIC TUBING (EMT) WITH STEEL FITTINGS. DIE-CAST FITTING SHALL NOT BE USED ON THIS PROJECT.

DISTRIBUTION EQUIPMENT:
PROVIDE NEW CIRCUIT BREAKERS WITH AIC RATING EQUAL TO OR GREATER THAN EXISTING CIRCUIT BREAKERS.

IDENTIFICATION:
PROVIDE A PERMANENT LABEL FOR DISCONNECT SWITCHES WITH CIRCUIT ID.

REVISE PANEL DIRECTORIES WITH NEW LOAD DESCRIPTION,

ABBREVIATIONS

A, AMP - AMPERES
AFF - ABOVE FINISHED FLOOR
AFG - ABOVE FINISHED GRADE
AL - ALUMINUM
C, CND - CONDUIT
CB - CIRCUIT BREAKER
CKT - CIRCUIT
CLG - CEILING
CND - CONDUIT
CU - COPPER
DISC - DISCONNECT
EC - EMPTY CONDUIT
ELEC - ELECTRICAL
ELEV - ELEVATOR
EM, EMERG - EMERGENCY
EMT - ELECTRICAL METALLIC TUBING
EX - EXISTING
F - FUSE
FBO - FURNISHED BY OTHERS
FLEX - FLEXIBLE
FLUOR - FLUORESCENT
FSS - FUSED SAFETY SWITCH
FTG - FITTING
G, GND - GROUND
GFI - GROUND FAULT INTERRUPTING
J-BOX, JB - JUNCTION BOX
KW - KILOWATT
MLO - MAIN LUGS ONLY
MTD - MOUNTED
N/A - NOT APPLICABLE
NFSS - NO FUSE SAFETY SWITCH
NIC - NOT IN CONTRACT
NTS - NOT TO SCALE
P - POLE
PB - PULL BOX, PUSH BUTTON
PH - PHASE
PNL - PANEL
RCPT - RECEPTACLE
RGS - RIGID GALVANIZED STEEL
SMR - SURFACE METAL RACEWAY
S/N - SOLID NEUTRAL
SS - STAINLESS STEEL
STD - STANDARD
SW - SWITCH
TBD - TO BE DETERMINED
TEL - TELEPHONE
TV - TELEVISION
TYP - TYPICAL
UNO - UNLESS NOTED OTHERWISE
V - VOLTAGE
VFD - VARIABLE FREQUENCY DRIVE
WP - WEATHERPROOF
XFMR - TRANSFORMER

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SPECIFICATION
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